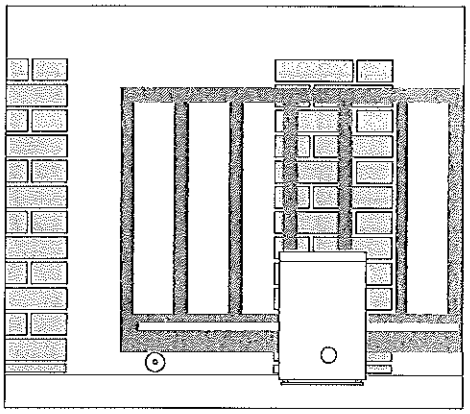
ELKA

BARRIER SYSTEMS
SLIDE GATE OPENERS
SWING GATE OPENERS

GARAGE DOOR OPENERS
LOCKING DEVICES
RADIO REMOTE CONTROL

Installation and Operating Instructions



Slide Gate Openers

EST 604 - EST 1204 - EST 2004

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1. Usage

For horizontal moving sliding gates either on rails or as cantilever, up to the weights stated in the technical data. Please take note of the valid safety regulations.

2. Technical Data

	EST 604	EST 1204	EST 2004
Maximum weight	600 kg	1,200 kg	2,000 kg
Recommended maximum length	8 m	12 m	16 m
Self blocking at open and closed position	yes	yes	yes
Approximate speed	0.18 m/s	0.18 m/s	0.18 m/s
Rack size	Module 4	Module 4	Module 4
Duty cycle	75%	75%	75%
Temperature range	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C
Emergency release	yes	yes	yes
Possible height adjustment	30 mm	30 mm	30 mm
Housing H x W x L	426x280x230 mm	426x280x230 mm	426x280x230 mm
Opener weight	27.5 kg	28.0 kg	28.5 kg
Power supply	230 V/ 50 Hz	230 V/ 50 Hz	230 V/ 50 Hz
Power consumption	0.37 kW	0.75 kW	1.1 kW
Control box	MO44-2	MO44-2	MO44-2
Electronic brake	yes	yes	yes

The MO 44 control box has among others the following characteristics:

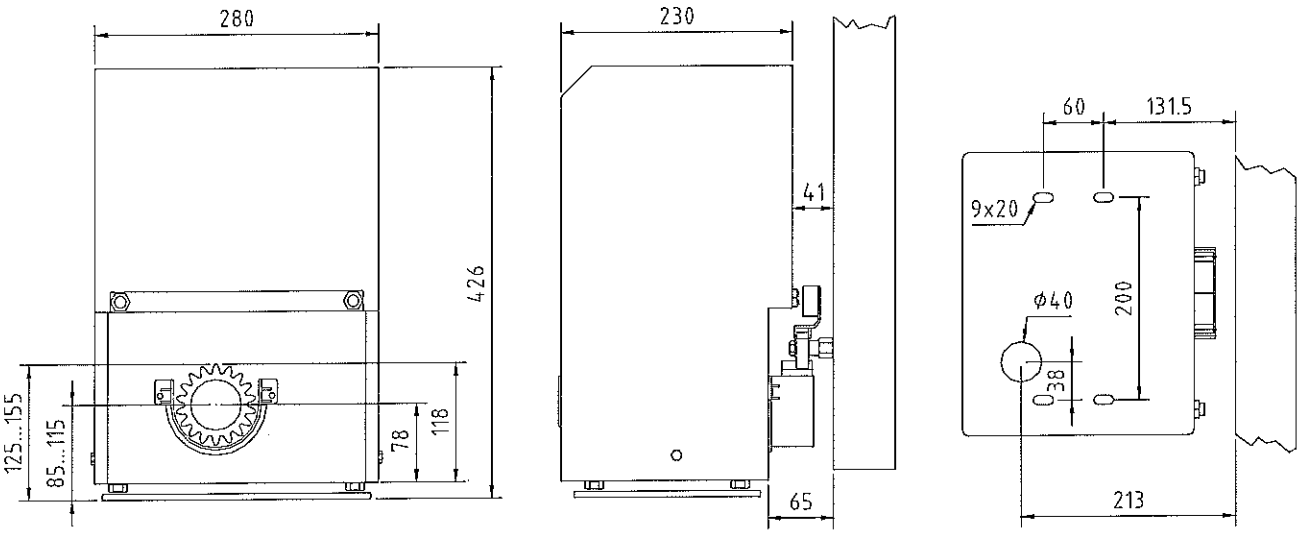
Safety:

Four separate reactions to the photo-cell (3 functions and stop when connected to BS).
Automatic test of the photo-cells before each gate movement can be enabled.
Integrated evaluator for safety contact strips with 8.2 kΩ terminating resistors.

Actions:

Partial opening (e.g. for pedestrians) can be programmed for any one position.
Automatic closure can be set separately for completely open and for partially open.
A dead man's operation mode can also be set.
Separate inputs for OPEN, STOP and CLOSE commands.
The OPEN command can also be transmitted to a further control box (e.g. for a barrier).
Optional timer card for automatic switching between day and night operation.

3. Measurements

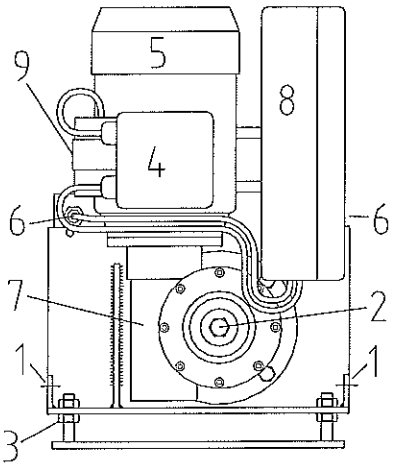


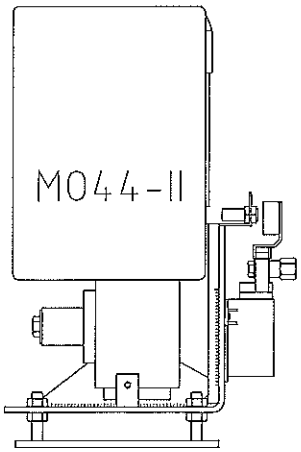
4. Installation

Ensure that the gate is rigid enough, free moving and suitable for automation (i.e. enough room to mount the rack on the gate).

Always disconnect the control box before arc welding is carried out.

IMPORTANT: Never run the motor without its capacitor!





1	Hood fixings
2	Emergency release, SW17
3	Height adjustment
4	Junction box
5	Motor
6	Limit switches
7	Gearbox
8	Controller
9	Capacitor

a) Using the example in section 6 decide what cables are required and where the control box is to be mounted (near the opener). The wiring should enter the control box from the bottom.

b) Make sure sufficient cable conduit or cable is laid into the foundation which should be free from frost. The opener should be at least 30 mm higher than the surrounding terrain and should be as near as possible to the pivoting point of cantilever gates.

c) Loosen the screws at both sides of the opener and remove the hood upwards. You now have access to the ground fixing holes of the opener.

d) Place the opener on the foundation parallel to the gate at a distance of 52 mm. Mark the middle of each hole on the foundation.

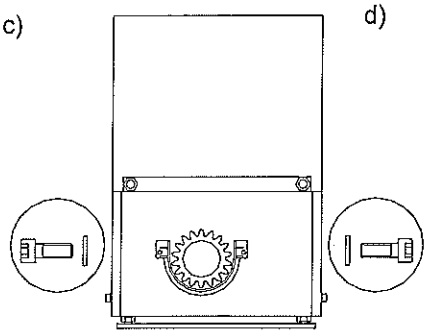
e) Fix the opener, either with plugs and screws, or with 8 mm diameter heavy duty tie bolts.

f) Decide at what height the rack is to be mounted on the gate. You can use the opener with the height adjustment plate, or if the rack has to be as low as possible, without the adjustment plate.

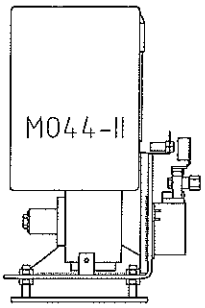
g) Using the accompanying tubular "T" bar disengage the opener (Anticlockwise disengages and clockwise re-engages. See section 4.1.).

h) Mount the rack at the correct height on the gate. Don't use edges of the gate, always use the pinion of the opener to determine the height for the rack on the gate.

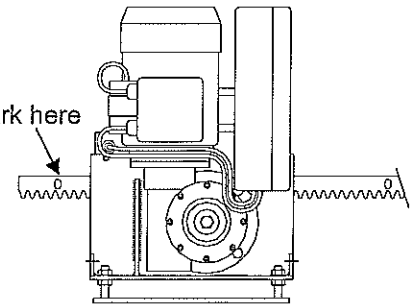
c)



d)



h)



Lay a length of rack horizontally on the pinion. Mark the height of the securing points on the gate through a hole in the rack. You may push the gate along while marking in order to gain a marking line.
The rack and pinion should fit together with minimum play but enough to ensure that the pinion does not carry the gate.

i) Drill holes at the appropriate points to secure the rack and then tap an M8 thread. The rack should protrude 20 cm further than the pinion at both ends of the gate, to allow room for the actuators for the open and closed limit switches.
j) Screw the distance pieces into the gate, which can also be welded in position.
k) Mount the 1 metre lengths of rack. For better results press a third length (with teeth upwards) against the joints to produce the required distance between lengths.
l) Push the gate completely open and closed and check that it doesn't jam. If necessary adjust the height of the rack.
m) Close the gate and using the actuator push the „gate closed" limit switch (the switch nearest to the end of the gate) until the limit switch activates. Use the middle of the elongated hole to secure the actuator, this leaves room for final adjustment in both directions if required.
n) Open the gate and carry out the same procedure for the limit switch „gate open".

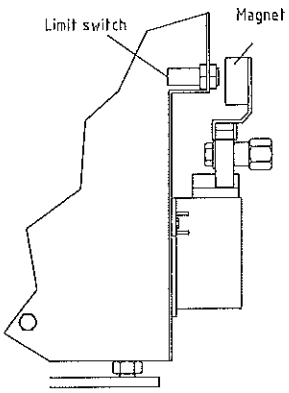
4.1. Emergency release

Insert the accompanying tubular "T" bar (SW17) through the round hole of the housing. Turning the bar a couple of turns anti-clockwise disengages the gears.
To re-engage the gears, turn the "T" bar clockwise as far as it will go. (see page 3, picture, 2).

5. Electrical installation

The control box must be as near as possible to the gate if radio remote control is to be used. All wiring should enter the control box from the bottom and have at least the suggested cross-sections.

a) Mount the control box and connect the motor, the limit switches and the power supply.
b) With the opener still disengaged do a test run to see if the motor is running in the right direction. The hood must either be on the opener, or you must push the stop switch manually (see page 3, picture, 8).
c) Connect BZ (button CLOSE) and ⊥ (section 6). The motor will start.
d) The **opener closes to the left** if the motor is connected correctly. The limit switch on the right will stop it.
e) If the **opener should close to the right**, then swap the motor leads for open and close in the control box and swap the limit switch leads SEZ and SEA in the control box. The left limit switch should stop the opener during closing.
f) Re-engage the opener and carry out a test run with the gate. Use the push button BT on the control panel which has serial switching OPEN-STOP-CLOSE-STOP.



Ensure that the LED SEZ turns off when the gate is closed (not SEA) otherwise malfunctions will occur (e.g. automatic closing becomes automatic opening).

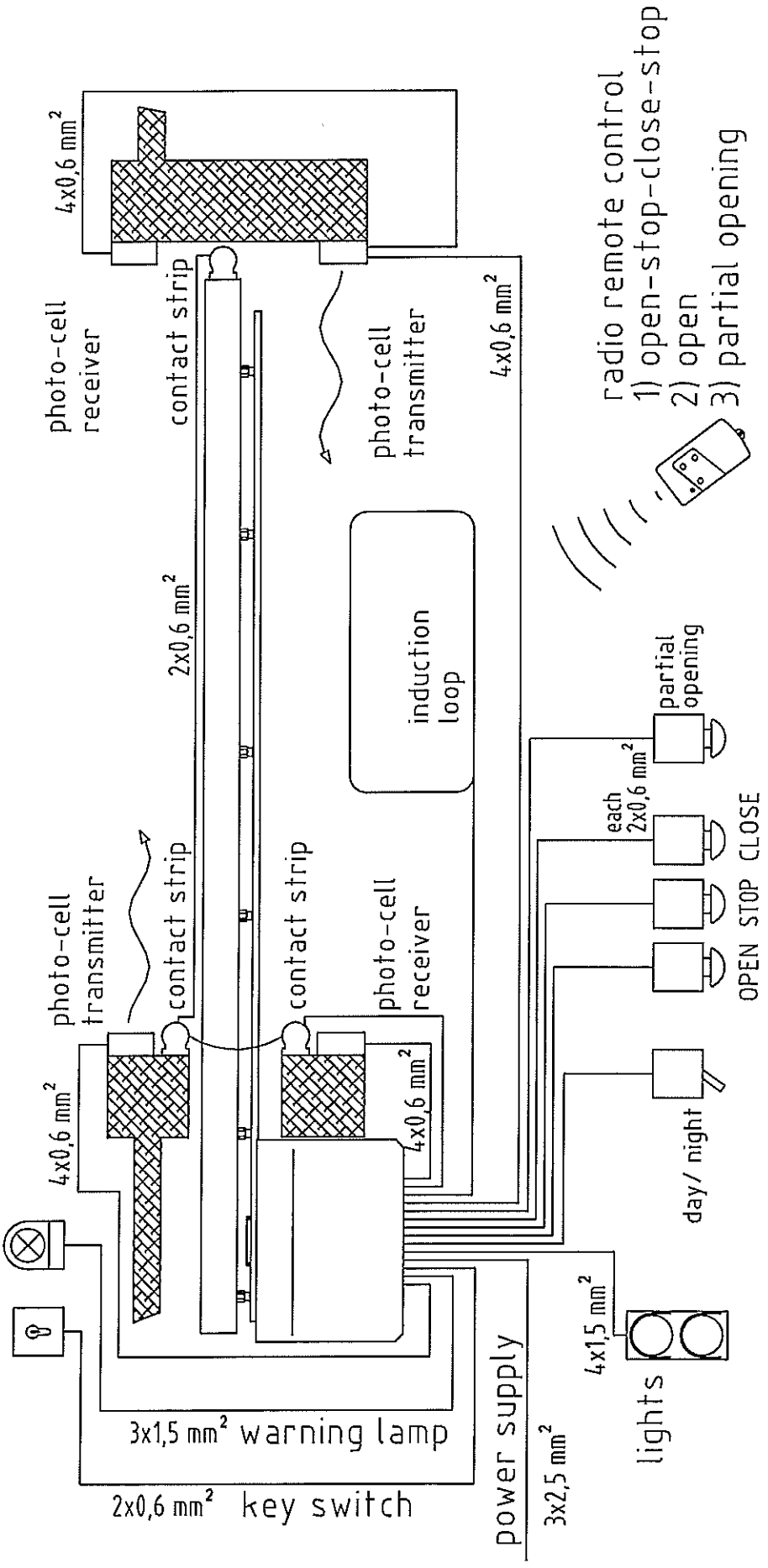
g) Check the gate closes to its correct position. If necessary readjust the actuators for the limit switches so that the gate closes exactly.
h) Connect all periphery equipment.

The time required to open or close the gate (running time) must be learned.

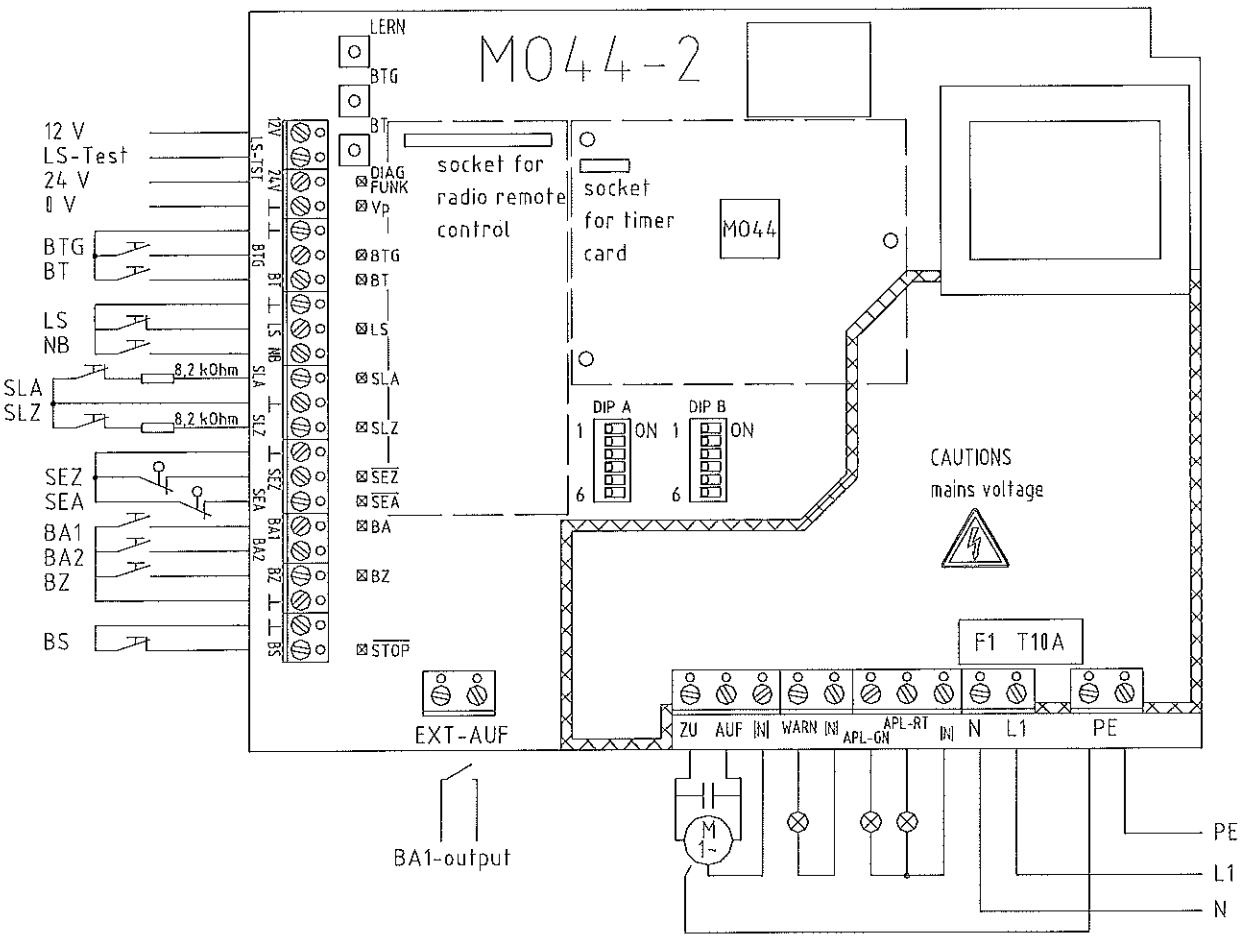
Caution:
During the learning mode the gate will move automatically several times.
Ensure nobody will enter the gate area.

Learning the running time: (see section 7.3)
Select the power level with S1.1 and S1.2. Choose a low setting, if required it can always be increased (see section 7.2.).
Press the LT button for at least 3 seconds. The LED DIAG lights.
Press the LT button twice. The gate closes from any position, opens completely and closes again. Press the LT button to confirm, the running time, 10 % reserve and the power required are saved.
The opener is ready for use.
Carry on setting operating mode as described in section 7.2.

6. Connection example



7. MO 44-2 Controller



7.1. Connections

PE	Ground	Power supply
L1	Phase L1	Power supply. 230 V 50Hz. The LED Vp lights if net voltage is present.
N	Neutral	Power supply

(N)	Neutral
APL-RT	Red signal, 230 V max. 60 W. The red light is on when the gate is closed and warning prior opening is not active.
APL-GN	Green signal, 230 V max. 60 W. The green light is on when the gate is open and warning prior closing is not active.
(N)	Neutral
WARN	Warning light 230 V max. 60 W. The warning light is on every time the gate moves and also if a warning prior to moving is active. The warning light can be used also as red if it's desired that red turns off when the gate is closed.

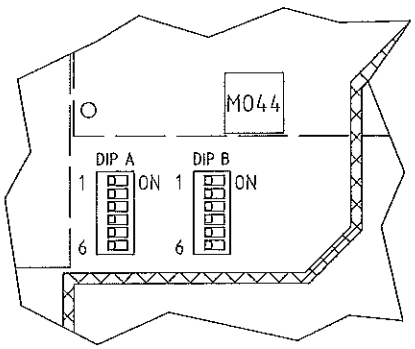
Gate status	Warning	Red	Green
Gate closed	Off	On	Off
Gate open	Off	Off	On
Prior warning and movement	On	Off	Off
Gate stopped in any position in between	Off	Off	Off
Gate stopped at pedestrian position	Off	Off	Off

(N)	Neutral for motor (Common for both directions)
AUF	Motor open - Direction
ZU	Motor close - Direction

EXT-AUF	Transmission of the signal BA1 to a second control box (n.o.). The relay EXT-AUF (max. 24V, 100mA) energises if BA1 is pressed, or the corresponding remote button is used and falls off after about 1 second. The connection EXT-AUF can be used to transmit the signal to a open-input to a second control box e.g. for a barrier.

BA1	Button to open the gate (n.o.), the signal is transmitted to terminal EXT-AUF. The LED BA lights if BA1 or the corresponding remote button is pressed. A permanent open signal is possible.
BA2	Button to open the gate (n.o.), the signal is valid only for this controller. The LED BA lights when BA2 is pressed. A permanent open signal is possible.
BZ	Button to close the gate (n.o.). The LED BZ lights when pressed. Delayed closing is possible (see operating mode).
LS	Photo-cell (n.c.), or a jumper. The LED LS lights when the photo-cell is interrupted. The controller can react in three different ways (see section 7.2.). The photo-cell can also be connected to BS and used as a stop button.
NB	Toggle between day and night operating mode, works only when the optional timer card is being used (see section 8.).
SLZ	Safety contact strips (n.c.) for direction "gate closed", or a resistor (8,2kΩ). The LED SLZ lights whenever the strips are activated. SLZ causes STOP and reversal for a short way.
SLA	Safety contact strips (n.c.) for direction "gate open", or a resistor (8,2kΩ). The LED SLA lights whenever the strips are activated. SLA causes STOP and reversal for a short way.
SEA	Limit switch „gate open" (n.c.) . The LED SEA turns off when limit switch is pressed.
SEZ	Limit switch „gate closed" (n.c.). The LED SEZ turns off when limit switch is pressed.
BS	STOP button (n.c.) or a jumper. The LED BS turns off when BS is pressed. BS stops gate movement (electronic brake). The gate can only move again when BS is released and a new signal is given.
BT	Push button for serial switching OPEN-STOP-CLOSE-STOP (n.o.). The LED BT lights when BT or the corresponding remote button is pressed (see automatic closure, too).
BTG	Button for pedestrian opening (n.o.). The LED BTG lights when BTG or remote button is pressed. If the gate is not in the pedestrian position, BTG will move it there. If the pedestrian opening is being used without automatic closure, then BTG works with serial switching OPEN-STOP-CLOSE-STOP. If automatic closure is on and the gate is at the pedestrian position, the BTG restarts the time to stay open.
24 Vdc	Power supply for periphery equipment.
12 Vdc	Power supply for photo-cells and other external equipment. **Maximum total for both outputs** **300 mA**
LS-TST	Power supply for transmitter. The controller switches the 24 Vdc on terminal LS-TST off.

7.2. Operating mode



Motor power (Changes only take effect if the running time is then learned again!)

DIP A1 OFF 100% power.
DIP A2 OFF

DIP A1 OFF 80% power.
DIP A2 ON

DIP A1 ON 70% power.
DIP A2 OFF

DIP A1 ON 60% power.
DIP A2 ON

Photo-cell (Photo-cell connected to BS is stop.)

DIP A3 OFF The opening or closing gate stops when the photo-cell is interrupted and opens when the
DIP A4 OFF photo-cell is free.

DIP A3 OFF The closing gate stops and opens immediately when the photo-cell is interrupted.
DIP A4 ON The opening gate is not effected.

DIP A3 ON The closing gate stops when the photo-cell is interrupted and carries on closing when the
DIP A4 OFF photo-cell is free. The opening gate is not effected.

Automatic closure for partial (pedestrian) opening.

DIP A5 OFF Automatic closure is off.

DIP A5 ON Automatic closure for the pedestrian position is enabled.
If the gate is at the pedestrian position, BTG restarts the time to stay open. The gate opens completely if BA1 or BA2 is pressed. The gate closes immediately if BT or BZ is pressed.

Automatic closure for completely open.

DIP A6 OFF Automatic closure is off.

DIP A6 ON Automatic closure from the open position is enabled.
If the gate is in open position BA1 or BA2 restart the time to stay open. The gate closes immediately if BT or BZ are pressed when the gate is open. The gate reopens if BT is pressed during closing.

Warning prior to opening

DIP B1 OFF No warning.

DIP B1 ON The warning light is switched on 4 seconds before the gate opens.

Warning prior to closing
DIP B2 OFF No warning.

DIP B2 ON The warning light is switched on 4 seconds before the gate closes.

Locking relays / Dead man's button
DIP B3 OFF The control box works with locking relays.

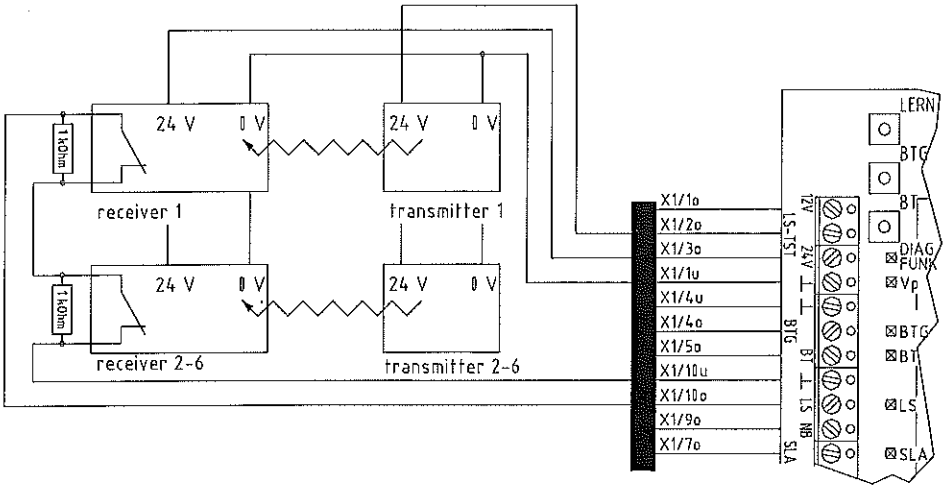
DIP B3 ON BA1, BA2 and BZ are dead man's buttons. (The opener stops as soon as the button is released).

Delayed closing
DIP B4 OFF The opening gate closes immediately when BZ is pressed.

DIP B4 ON If the gate is opening and BZ is pressed, the signal is stored until the gate is open and then carried out.

Three-phase operation
DIP B5 OFF Drive with single-phase motor (with electronic brake)
DIP B5 ON Three-phase motor (with reversing contactor and mechanical brake)

Photo-cell testing before gate movement
DIP B6 OFF Photo-cell test is not activated.
DIP B6 ON A photo-cell test occurs before each moving.
Attention: The photo-cell test has to be learnt when programming the controller. Before the moving of the gate, the photo-cells may be tested.
Max. 6 photo-cells can be connected to the controller MO44-2 and be tested. For the testing of more than one photo-cell the relay connections of the receivers have to be connected in series. Parallel to the relay connections a resistor of 1kOhm (+/- 5%) each has to be connected.



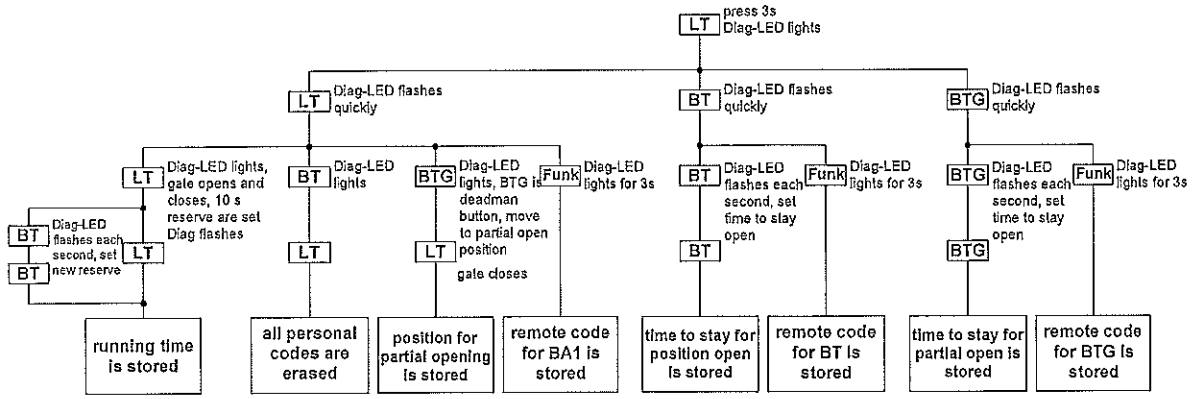
The photo-cell test consists of two parts: The transmitter is taken off the power supply and then the receiver has to report an obstacle (within max. 2.5 seconds).
The transmitter is connected to the power supply again and then the receiver has to report that no obstacle is present. If during part one the receiver does not report an obstacle, the photo-cell is faulty. If during part two the obstacle is still being reported (the controller assumes a real obstacle being present), the gate will not move. No error code is shown.

7.3. Programming

The minimum to ensure that the opener works correctly is that the running time must be learned. Other things like automatic closure, or time which the gate should stay open before closing can also be set during programming.

The following settings can be altered if required:

Time required to open (running time)	(0...150 s,	default 30 s)
Reserve for the running time	(0...10 s,	default 10 s)
Time to stay open before automatic closure	(0...300 s,	default 20 s)
Time to stay open before automatic closure from partial position	(0...300 s,	default 20 s)
Position for partial opening for pedestrians	(any position,	default half way)
Remote control codes for BT, BTG and BA1		(default BT -+-+...)


LT press 3s Diag-LED lights
LT Diag-LED flashes quickly
BT Diag-LED flashes quickly
BTG Diag-LED flashes quickly
LT Diag-LED lights, gate opens and closes, 10 s reserve are set Diag flashes
BT Diag-LED flashes each second, set new reserve
LT
BT Diag-LED lights
LT
BTG Diag-LED lights, BTG is deadman button, move to partial open position
LT
gate closes
Funk Diag-LED lights for 3s
BT Diag-LED flashes each second, set time to stay open
BT
Funk Diag-LED lights for 3s
BTG Diag-LED flashes each second, set time to stay open
BTG
Funk Diag-LED lights for 3s
running time is stored
all personal codes are erased
position for partial opening is stored
remote code for BA1 is stored
time to stay for position open is stored
remote code for BT is stored
time to stay for partial open is stored
remote code for BTG is stored

Learning the time for opening (running time) and reserve
Press LERN until the LED DIAG lights (approx. 3 seconds).
Press LERN twice.
The gate closes from any position, opens completely and closes again. The time required and the power selected (DIP A1 and DIP A2) are then saved. The LED DIAG starts flashing quickly, the running time is learned. Press LERN if you want to accept the default value for the running time reserve (10 s). The controller is ready for use.
If you want to change the running time reserve press BT, the LED DIAG flashes in 1 second intervals, press BT when the required time has elapsed. The controller is ready for use.
The position for partial opening is automatically set to half way when the running time is learned, this means that any other value for pedestrian opening must be learned after the running time!

Learning partial opening for pedestrians
Press LERN until the LED DIAG lights (approx. 3 seconds).
Press LERN once. The LED DIAG flashes quickly.
The BTG button moves the gate in dead mans mode. When the gate is at the required position press LERN.
The gate closes automatically and the information is stored. The controller is ready for use.

Learning the time to stay open before automatic closure (completely open)
Press LERN until the LED DIAG lights (approx. 3 seconds).
Press BT twice. The LED DIAG flashes in 1 second intervals.
When the time required has elapsed press BT again.
The time is stored and the controller is ready for use. The time is only effective when automatic closure is on (DIP A6 ON).

Learning the time to stay open before automatic closure (partial opening for pedestrians)
Press LERN until the LED DIAG lights (approx. 3 seconds).
Press BTG twice. The LED DIAG flashes in 1 second intervals.
When the time required has elapsed press BTG again.
The time is stored and the controller is ready for use. The time is only effective when automatic closure is on (DIP A5 ON).

Learning the remote control code for BT
Press LERN until the LED DIAG lights (approx. 3 seconds).
Press BT once. The LED DIAG flashes quickly. Press the appropriate button of your transmitter.
The LED DIAG stays on as long as a signal is received. Release the button. The code is stored and the controller is ready for use.

Learning the remote control code for BTG
Press LERN until the LED DIAG lights (approx. 3 seconds).
Press BTG once. The LED DIAG flashes quickly. Press the appropriate button of your transmitter.
The LED DIAG stays on as long as a signal is received. Release the button. The code is stored and the controller is ready for use.

Learning the remote control code for BA1
Press LERN until the LED DIAG lights (approx. 3 seconds).
Press LERN once. The LED DIAG flashes quickly. Press the appropriate button of your transmitter.
The LED DIAG stays on as long as a signal is received. Release the button. The code is stored and the controller is ready for use.

8. Timer card (optional)

The 7-day-timer can switch between day and night operating.
Day: A continuous signal to open is given in order to hold the sliding gate open. All Signals from BA1 are sent to EXT-AUF for a further control box.
Night: All signals from BA1 operate the sliding gate and are sent to EXT-AUF for a further control box.
Holidays: The switch NB (night operation) can override the timer. If NB is closed, night operation is active independent of the status of the timer. The timer has control when NB is open.
Forcing day operation at night: A continuous signal to BA2 opens the sliding gate and keeps it open independent of the timer status.

Times	NB	Gate status
Off	Doesn't matter	Does not affect the gate
Switches on	Off	The gate opens
On	Off	The gate is held open
Switches off	Off	The gate closes
On	Switches on	The gate closes, night operation is forced
On	Switches off	The gate opens, day operation is continued
Doesn't matter	On	Does not affect the gate

9. Fault code

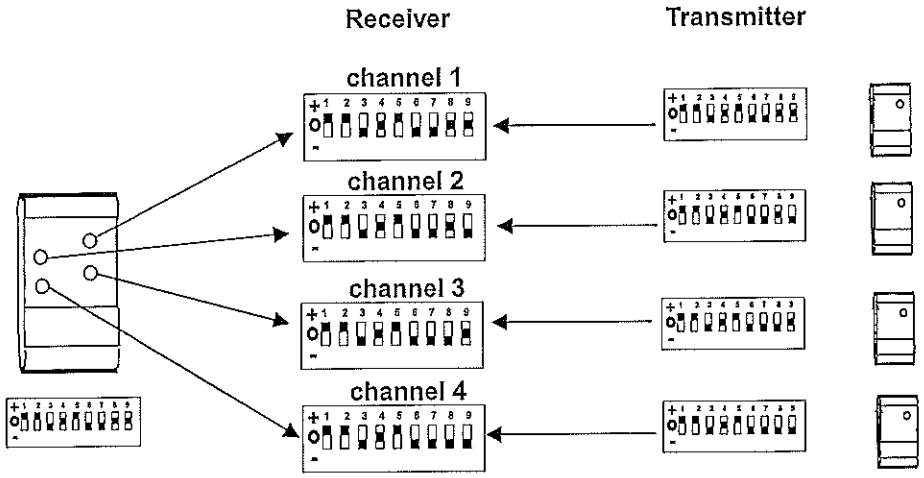
The following faults are detected by the controller and reported as a code with the DIAG and remote control LED:

Code	Fault
DIAG 2 flashes	Both limit switches are activated. Check the switches and wiring.
DIAG 3 flashes	Photo-cell testing unsuccessful.
DIAG 4 flashes	Safety contact stripes (SLA) testing unsuccessful.
DIAG 5 flashes	Safety contact stripes (SLZ) testing unsuccessful.
DIAG 6 flashes	Running time error message. Check the switches or repeat the learning of the running time.
DIAG 7 flashes	The power supply limit for the external equipment 12 V has been reached. The power source load is too high. The controller is blocked.
DIAG 8 flashes	The power supply limit for the external equipment 24 V has been reached. The power source load is too high. The controller is blocked.
DIAG 9 flashes	The memory has lost the data. Repeat the learning of the running time.
DIAG 10 flashes	The controller is faulty.
DIAG 11 flashes	The controller has detected a fault in the redundant detection of BS (stop contact). The controller is faulty.
DIAG 12 flashes	The controller detects that the TRIAC or one of motor relays is faulty.

10. Setting personal code in the K Type radio remote control

Example A) **Receiver using the code switches on the logic board :** MO 33, MO 43 or MO 542 **or receiver with code switches in conjunction with the boards :** MO 32, MO 42, MO 52Z2, MO 60 or MO 62

Follow the example in the diagram below.



Transmitter SK, SKX and SKI in conjunction with K Type receivers using code switches.

The switches 1 to 7 in transmitter and receiver must have the same settings. The switches 8 and 9 of the receiver allocate a channel appropriate to the button of the transmitter. The switches 8 and 9 in multi - channel must be set at 0.
The examples on the right in the diagram above show the allocation of a channel with a one - channel transmitter using the switches 8 and 9 as in the receiver.

Example B) **Receivers without code switches :** Logic boards MO 34, MO44 or MO 55

These receivers learn the code from the transmitter as described in the paragraph 'Learning personal code' in these installation instructions.

Example C) Combination of examples A and B

A garage door opener with MO 55 and a swing gate opener with either MO 32 or MO 33.

1.) Set the code of the transmitter and receiver for the swing gate opener as described above. Switches 1 to 7 have the same settings in both transmitter and receiver. The switches 8 and 9 set at 0.

The swing gate opener now receives signals from the first button of the transmitter.

2.) You can now allocate the second button to the garage door opener by going through the procedure described in the installation instructions for the garage door opener in the paragraph 'Learning personal code'.

11. General Notes to Safety

These operating instructions must be available on site at all times. It should be read thoroughly by all persons who use, or service the appliances. Improper usage or servicing or ignoring the operating instructions can be a source of danger for persons, or result in material damage. If the meaning of any part of these instructions isn't clear, then please contact ELKA Torantriebe GmbH & Co. Betriebs KG before you use the appliance.
This applies to all setup procedures, fault finding, disposal of material, care and servicing of the appliance.
The accident prevention regulations and applicable technical regulations (e.g. safety or electrical) and environment protection regulations of the country in which the appliance is used also apply.
All repairs on the appliances must be carried out by qualified persons. ELKA Torantriebe GmbH & Co. Betriebs KG accepts no liability for damage which is caused by using the appliance for purposes other than those for which it is built.
ELKA Torantriebe GmbH & Co. Betriebs KG cannot recognise every possible source of danger in advance. If the appliance is used other than in the recommended manner, the user must ascertain that no danger for himself or others will result from this use. He should also ascertain that the planned use will have no detrimental effect on the appliance itself. The appliance should only be used when all safety equipment is available and in working order. All faults which could be a source of danger to the user or to third persons must be eliminated immediately. All Warning and Safety notices on the appliances must be kept readable.
All electrical periphery equipment which is connected to the appliance must have a CE Mark, which ensures that it conforms to the relevant EEC regulations. Neither mechanical nor electrical alterations to the appliance, without explicit agreement of the manufacturer, are allowed. All alterations or extensions to the appliance must be carried out with parts which ELKA Torantriebe GmbH & Co. Betriebs KG have defined as suitable for such alterations, and be carried out by qualified personnel.
Any contravention of these conditions revokes the manufacturer's guarantee and also the CE Mark and the user is alone responsible for the consequences.
Our service department is available to answer all queries about these conditions and, of course, about our appliances.

The operation of the system within CEN countries must also be conformant with the European safety-relevant directives and standards.

We reserve the right to make technical improvements without prior notice.

EN ISO 9001 Quality international level

BIRCHER REGLOMAT
World of Sensoric

INTRA 50
INT-SET-50, 51

Deutsch 1–8
English 9–16
Français 17–24
Italiano 25–32

Betriebsanleitung
Operating Instructions
Instructions d'utilisation
Istruzioni per l'uso

English

INTRA

Switching unit with an inductive transmission system in combination with safety edges for protection from crushing and shearing hazards on automatic sliding gates.

Safety

INTRA 50 meets the Standard EN-954-1 "Safety-Relevant Parts of Controllers".
The requirements of category 3 in accordance with EN-954-1 are met, if the drive unit is directly connected with the INTRA 50. If the drive unit is connected via downstream relays, the contacts of these relays must be monitored against welding.
It complies with the European Standard for gates, EN 12978 "Protective devices for power-operated doors and gates" in combination with the corresponding safety edges. Please contact us for a selection of safety edges rated for use in the system.

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Prior to starting installation or fault rectification, take the following safety precautions:

- Disconnect the system from the power supply
- Secure the system against unintentional restarting
- Make sure that the system is not live!
- Ground the phases and short-circuit them
- Cover any neighbouring live parts or remove them
- Cover the unit during mounting! Foreign bodies (e.g. drillings) can damage the devices
- If there is a high risk of contamination or if the ambient atmosphere is aggressive, protect the device with a housing

Safety Instructions

- Mounting, startup, modification and retrofitting of the system may only be carried out by an electrician!
- Before starting work, disconnect the unit / system from the power supply!
- While electrical switching units are being operated
  – individual parts carry dangerous voltages,
  – dangerous, ionised gases can escape, e.g. if a short-circuit occurs,
  – protective covers may not be removed
- Observe the safety regulations of electrical engineering and the Trade Association!
- If safety regulations are not observed, this can lead to death, serious injury or considerable material damage!
- Keep these operating instructions for later use!

1 System Components

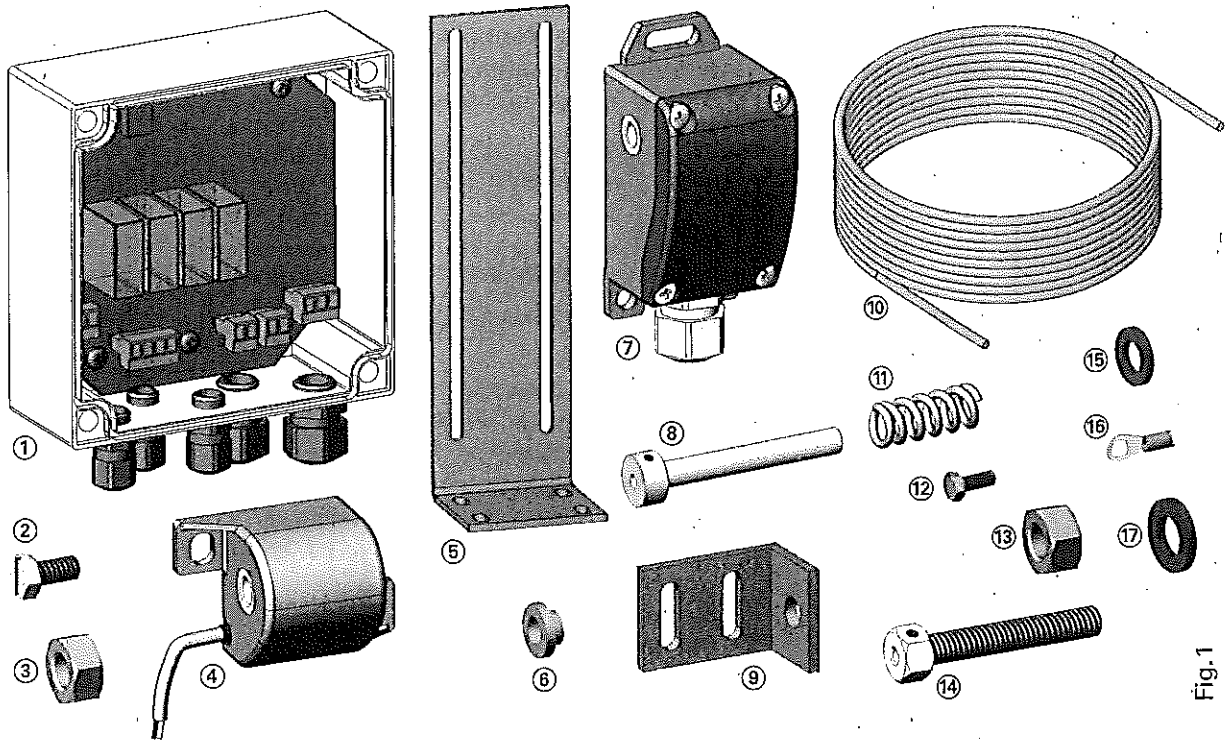


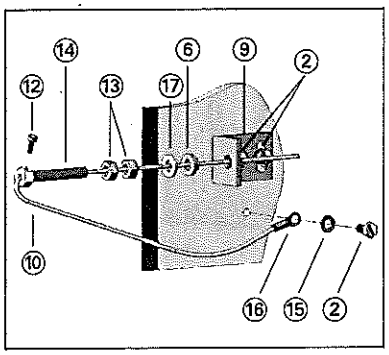
Fig. 1

① Switching device INT-50, 51
② 11 x Bolt M6 x 12
③ 2 x Nut M6
④ Coil INT-FIX 50
⑤ Floor bracket INT-MC 50
⑥ 2 x Plastic sleeve
⑦ Converter INT-MOB 50
⑧ Hollow pin
⑨ 2 x Mounting bracket INT-MS 50
⑩ 16 m steel cable
⑪ Compression spring
⑫ 2 x Bolt M4 x 10
⑬ 2 x Nut/⑰ Washer for M8
⑭ Banjo bolt
⑮ 13 x Washer for M6
⑯ 2 x Cable lug for M6

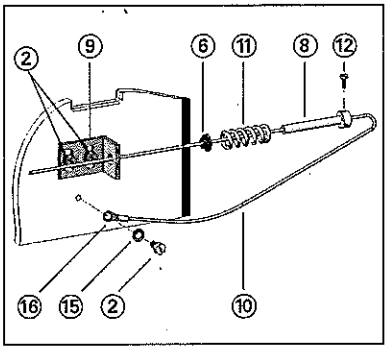
2 Installation

2.1 Mechanical Mounting

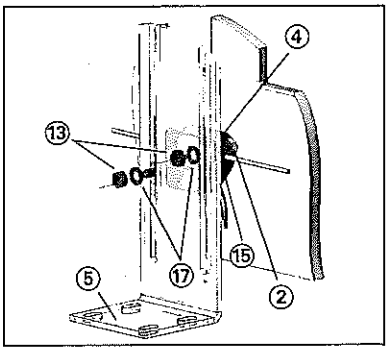
The instructions presented here are a recommendation only. The arrangement of the individual components depends on the particular gate design and the conditions in the building.



Mounting the bracket clamping side Fig. 2



Mounting the bracket with compression spring Fig. 3



Mounting the bracket with coil INT-FIX 50 Fig. 4

1. Align both mounting brackets ⑨ horizontally and attach them. Tighten only the bolts ② on the spring side. Do not tighten the bolts ② on the tensioning side yet.

2. Mount the converter INT-MOB 50 ⑦ on the clamping side (recommendation) cable glands downward. Alternatively it can also be installed recessed as shown below. In this type of mounting, the loose end of the cable ⑩ is passed through the converter INT-MOB 50 ⑦ and connected to the gate.

3. Mount the coil INT-FIX 50 ④ to the floor bracket ⑤ at the cable height. Do not tighten the bolts ② yet.

4. Pull the cable ⑩ through the hollow pin ⑧ with spring ⑪, plastic sleeve ⑥ and mounting bracket ⑨. Leave 0.5 m of cable projecting for contacting the gate. Then pull the cable ⑩ through coil INT-FIX 50 ④, converter INT-MOB 50 ⑦, on the clamping side through mounting bracket ⑨, plastic sleeve ⑥, washer ⑰ and banjo bolt ⑭ with two screwed-on nuts ⑬ and leave approx. 0.5 m projecting. Screw on the first hexagon nut ⑬ up to the heaxd of the banjo bolt.

5. Fix the cable on the spring side using bolt ⑫. On the clamping side, tension the cable firmly by hand so the spring ⑪ is preloaded and secure with bolt ⑫.

6. Cut the cable on the left and right to the required length and press on a cable lug ⑯ on both sides. Screw the cable lugs ⑯ onto the gate using hexagon bolts ② and washer ⑮. Take particular care that the contact points on the gate make a good connection. Clean the contact point and scrape off any paint or contamination.

7. Align the coil INT-FIX 50 ④ vertically and horizontally so that the cable passes through the middle of the passage tube in the coil. Use shims underneath the floor bracket ⑤ for horizontal alignment. Tighten the bolts.

8. Clamp the cable with the first hexagon nut ⑬ on the banjo bolt ⑭ so it is firmly tightened and does not sag at any point. Lock with the second nut.

9. Mount the safety edges on the moving gate section and route the cable to the converter INT-MOB 50 ⑦.

10. Mount the safety edges on the fixed gate section and route the cable to the switching device.

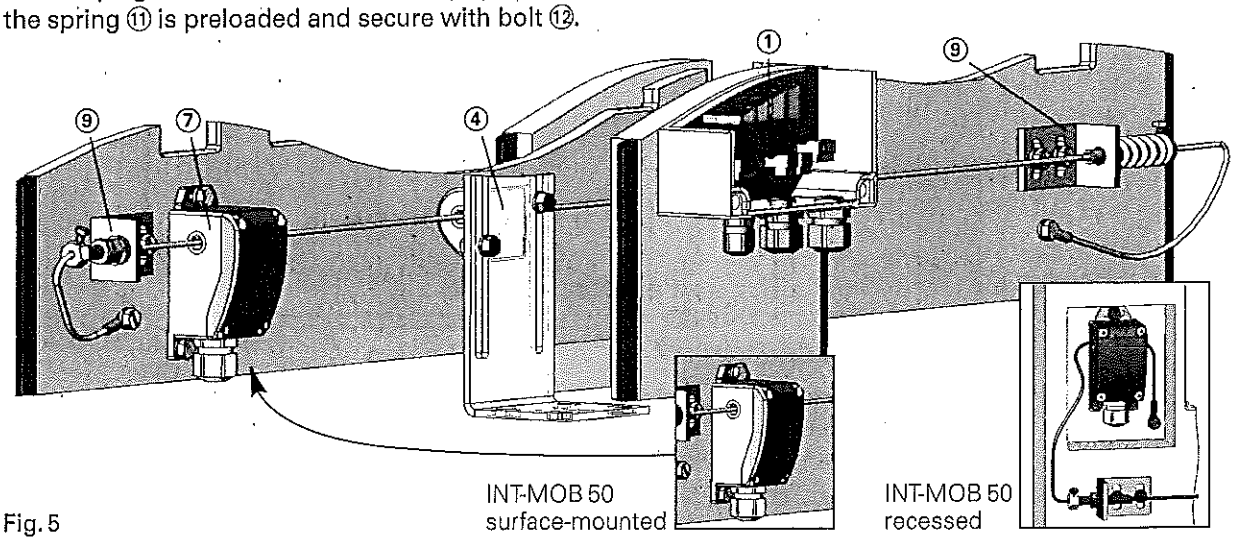


Fig. 5

2.2 Electrical Installation

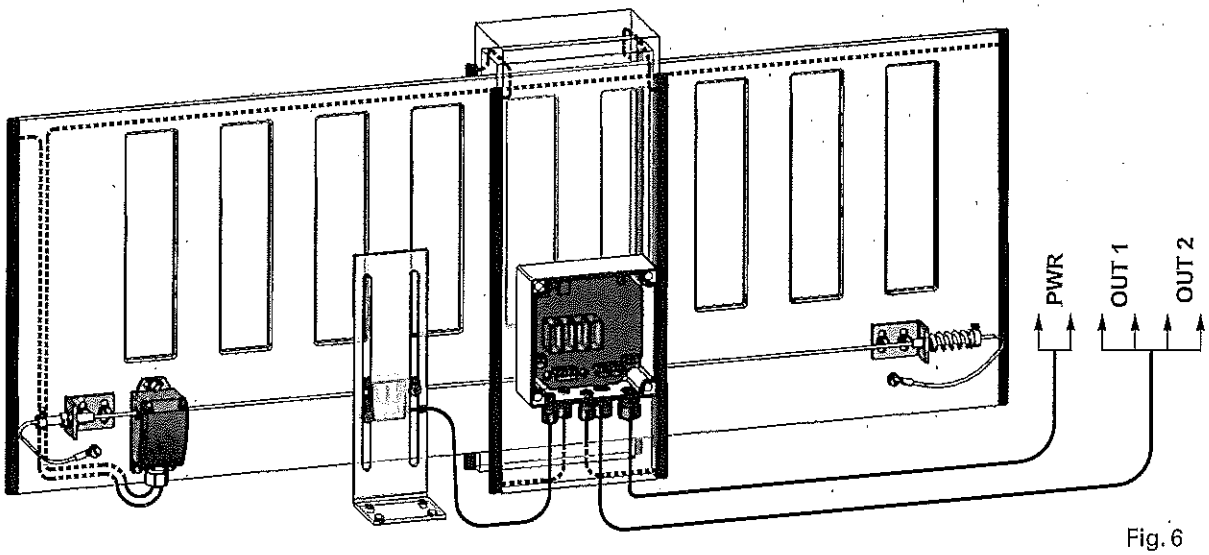


Fig. 6

- Wire the edges on the stationary gate section to the switching device ① (conn. IN3 or IN4)
- Wire the coil INT-FIX 50 ④ to the switching device (max. extension: 50 m/164.04')
- Wire the edges on the moving gate section to the converter INT-MOB 50 ⑦ (conn. IN1 or IN2)
- If a connection is left unoccupied, it must be jumpered with an 8.2 kohm resistor
- Apply the 230 VAC or 24 VADC supply to the PWR connection of the control unit (center terminal not connected)
- Take particular care that the contact points between the cable and the gate make a good electrical connection
- Wire the safety edges and devices as shown in the connection diagram

2.3 Connection Diagram

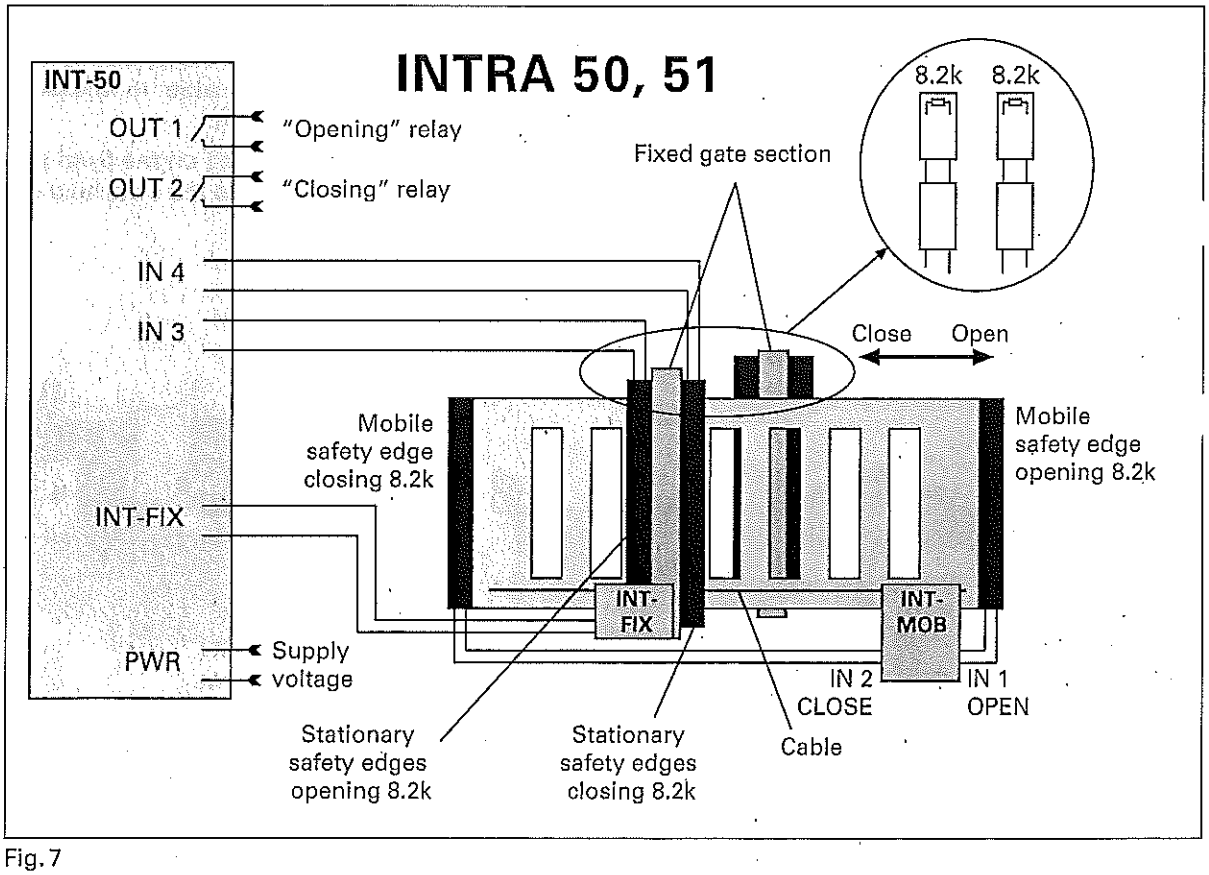


Fig. 7

2.4 Terminals / Terminal Assignment INT-50, 51

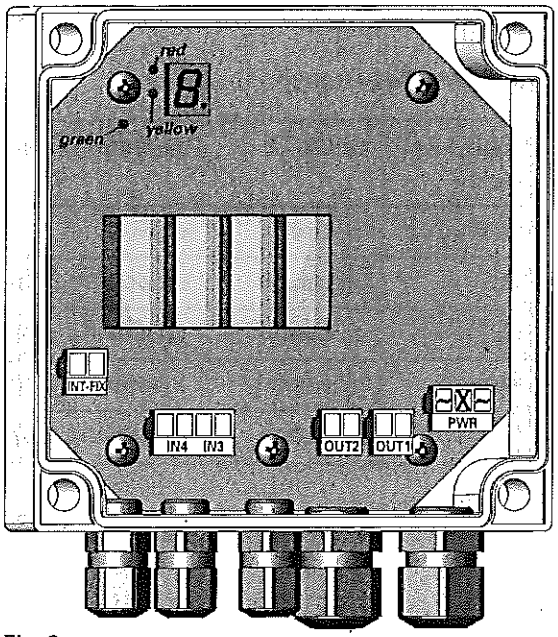


Fig. 8

2.5 Terminals/Terminal Assignment INT-MOB 50

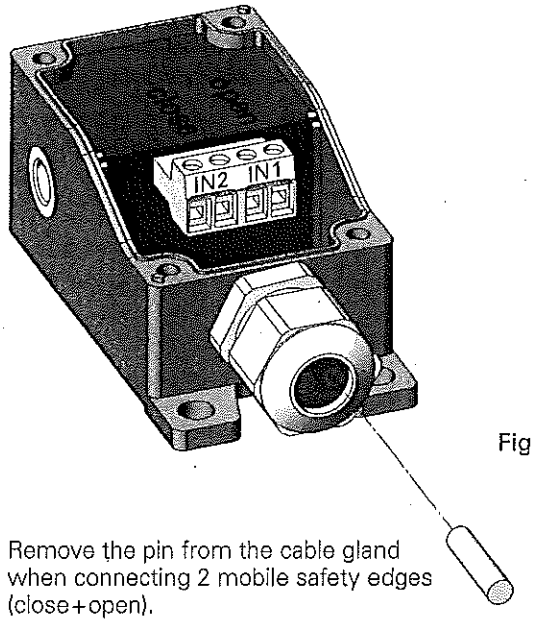


Fig. 9

Remove the pin from the cable gland when connecting 2 mobile safety edges (close+open).

2.6 Connecting the Safety Edges to INT-MOB 50 and INT-50, 51

- Maximum total length of the safety edge with cable: 30 m/98 ft
- Several safety edges on the same input must be connected in series (Fig.10)
- The last safety edge must be terminated with an 8.2 kohm resistor (Fig.10)

We recommend that you measure the resistance values of the sensors prior to connection. If the sensor is not actuated, the resistance values should be between 7.5 and 8.7 kohm (typically 8.2 kohm).

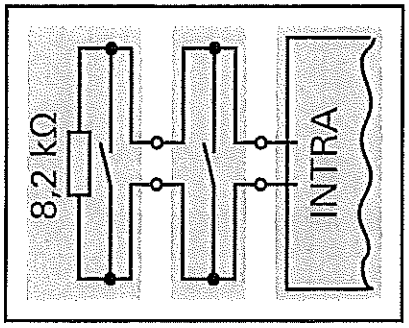


Fig. 10

If safety edges are only connected to one safety edge input (IN 1 or IN 2, IN 3 or IN 4), the unused channel IN2 or IN1 must be jumpered with 8.2 kohm otherwise a fault will be displayed.

2.7 Outputs

The system has two separate safety outputs, OUT1 and OUT2 (Fig.7)

Safety output OUT1 ("opening" relay) and OUT2 ("closing" relay)
When the device is switched on, the safety edges are permanently monitored on the control unit INT-50 and the converter INT-MOB 50 (activated – not activated – interrupted)
If everything is OK, the relays of safety outputs OUT1 and OUT2 close.

OUT1
- If the safety edge on IN1 is activated on the INT-MOB 50 or IN3 on INT-50, the relays of the safety output OUT1 open for as long as the safety edge is activated
- When the safety edges are free again, the safety relays close

OUT2
- If the safety edge on IN2 is activated on the INT-MOB 50 or IN4 on INT-50, the relays of the safety output OUT2 open for as long as the safety edge is activated
- When the safety edges are free again, the safety relays close

2.8 Start-up

After switching on the device, the operating state is displayed by the green LED being lit and the flashing dot on the 7-segment-display.
To check the correct safety function every safety edge has to be actuated:

Safety edge actuated	Yellow LED	7-segment-display	OUT1	OUT2	Gate movement
None	off	flashing dot	closed	closed	–
at IN1 (mobile, open)	on	"1"	**opens**	closed	opening stops
at IN2 (mobile, close)	on	"2"	closed	**opens**	closing stops
at IN3 (stationary, open)	on	"3"	**opens**	closed	opening stops
at IN4 (stationary, close)	on	"4"	closed	**opens**	closing stops

2.9 Dimensions

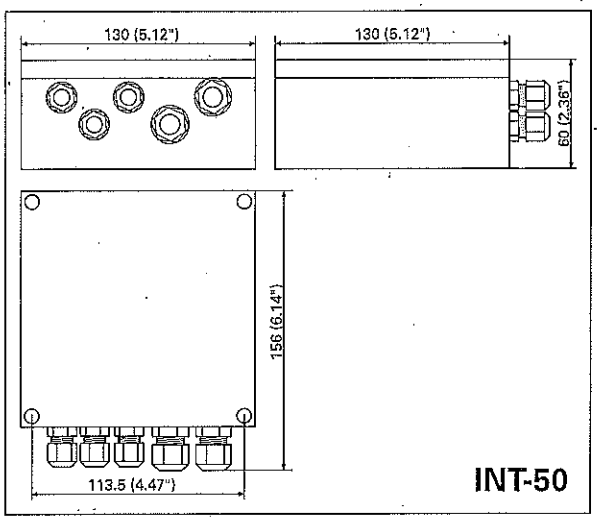


Fig. 11

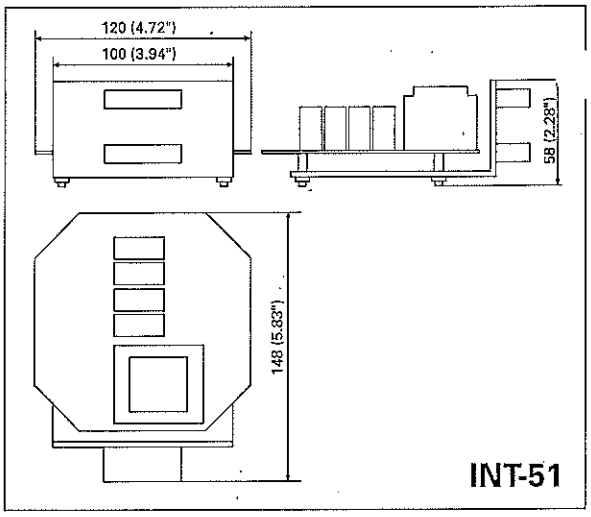


Fig. 12

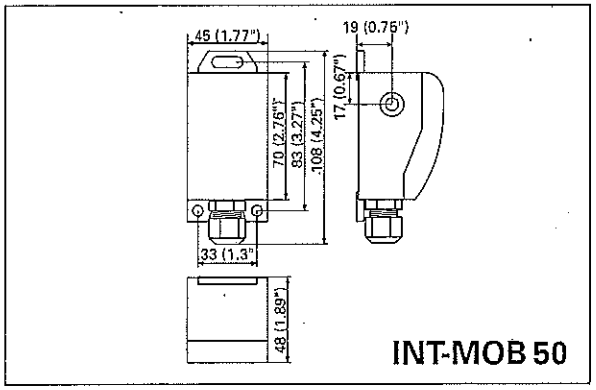


Fig.13

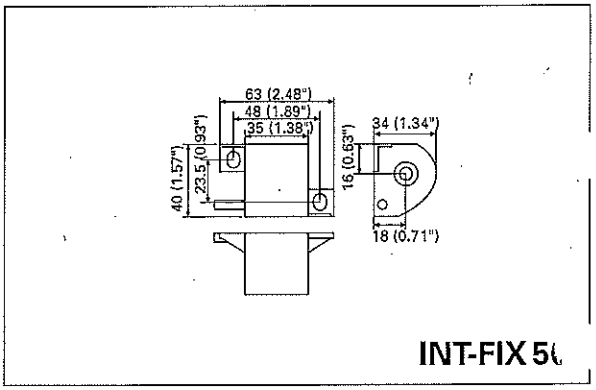


Fig. 14

3 Fault Analysis

A fault is displayed by the LED being lit and the nature of the fault is indicated on the 7-segment-display (see Fault Index section).

Basic procedure

- Switch off the power supply to the system
- Check all existing safety edges using an ohmmeter. The resistance value when the edges are not activated must be around 8.2 kohm
- The resistance must be around 0 ohm when the edges are activated

3.1 Fault Index

7-SEGMENT-DISPLAY*			E-1	E-2	E-3	E-4	E-C	1	2	3	4	E-5/6
Green LED	●		●	●	●	●	●	●	●	●	●	●
Yellow LED								●	●	●	●	
Red LED			●	●	●	●	●					●
Dot on 7-segment-display	● flashes											
Fault index	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**	**l**

* In double-digit displays (e.g. E-1) the 7-segment-display changes from *E* to *1* every second

Fault index

a No fault, the system is functioning

b Check supply voltage at PWR connection

c Interruption in "Mobile open" safety edge. Check connections IN1 on the converter INT-MOB 50. Check the resistance of the mobile safety edge "Open".

d Interruption in "Mobile close" safety edge. Check connections IN2 on the converter INT-MOB 50. Check the resistance of the mobile safety edge "Close".

e Interruption in "Stationary open" safety edge. Check connections IN3 on the control unit INT-50. Check the resistance of the stationary safety edge "Open".

f Interruption in "Stationary close" safety edge. Check connections IN4 on the control unit INT-50. Check the resistance of the stationary safety edge "Close".

g Check the cable circuit
- Check the linkage and connection of the coil INT-FIX 50 to the switching device INT-50.
- Check the cable insulation (no short circuit from the cable to the gate before the converter INT-MOB 50).
- Remove the connection between the cable and the gate structure at the converter INT-MOB 50 and measure the resistance between the cable and the gate structure. The resistance must not be more than 3 ohms (normally 1 to 2 ohms).
- Check the other connection between the cable and the gate structure or check for a break in the cable if the resistance is greater than 3 ohms.
- Check the connection on the converter INT-MOB 50 if the resistance is less than 3 ohms.

h The mobile safety edge "open" is activated or short-circuited, or there is a short circuit in the connection cable.

i The mobile safety edge "closed" is activated or short-circuited, or there is a short circuit in the connection cable.

j The stationary safety edge "open" is activated or short-circuited, or there is a short circuit in the connection cable.

k The stationary safety edge "closed" is activated or short-circuited, or there is a short circuit in the connection cable.

l Timing-Problem: check supply voltage at PWR connection (device operating!) (allowable tolerances +/-10%!) and cable circuit (see fault index g). If no failure can be found, please contact the customer service of Bircher Reglomat AG.

No safety edges are allowed to be connected in parallel to the safety edge inputs (IN1 to IN4). The yellow LED lights up and the corresponding number appears on the 7-segment-display if two or more safety edges are connected to an input in parallel.

Check the device periodically to make sure it is functioning correctly and document these checks.

4 Maintenance

After the system has been correctly mounted and installed and if the technical data are observed, it will operate without any maintenance being required.
See EN 12453 for gate maintenance.

5 Technical Data

Mechanical data

Switching device	INT-50	INT-51
– Housing	Grey ABS, transparent cover	(min. protection class of the installation place: IP54)
– Dimensions	130 x 130 x 60 mm / 5.12" x 5.12" x 2.36"	148 x 120 x 58 mm / 5.83" x 4.72" x 2.28"
– Weight	455 g/1.00 lb (24 V), 710 g/1.56 lb (230 VAC)	330 g/0.73 lb (24 V), 600 g/1.32 lb (230 VAC)

Converter INT-MOB 50	
– Housing	Anthracite ABS
– Dimensions	94 x 45 x 48 mm / 3.70" x 1.77" x 1.89"
– Weight	150 g/0.33 lb

Coil INT-FIX 50	
– Housing	Anthracite ABS
– Dimensions	63 x 40 x 34 mm / 2.48" x 1.57" x 1.34"
– Weight	165 g/0.36 lb (incl. 3 m / 118.11" cable)
– Cable length	3 m / 118 in, max. 50 m / 164 ft, min. cross-section 0.34 mm²/AWG 22

Electrical data

– Power supply	230 VAC +/-10 % 24 VACDC +/-10 %*
– Frequency	50/60 Hz
– Power consumption	10 VA at 230 VAC 7 VA at 24 VAC 4 W at 24 VDC

***The power supply must be generated by a safety transformer in acc. with IEC 742. Cables must be laid so they are protected from mechanical damage.**

Output

– Type	2x2 positively driven relays
– Utilization category acc.to EN60947-4-1*	AC-1: 250 V/2 A/500 VA DC-1: 24 V/2 A/48 W
– Utilization category acc.to EN60947-5-1* (DC13: 6 switchings/min.)	AC-15: 250 V/2 A/500 VA DC-13: 24 V/2 A/48 W
– Fuse Protection acc.to EN60947-5-1	2 A slow
– Switching Capacity	24 VDC/1 A, resistive load 30 VAC/1 A, resistive load

***If not mentioned ratings are required, ask for them at the manufacturer.**

Displays

– Operation	Green LED
– Safety shutdown	Yellow LED
– Fault/interruption	Red LED
– Fault index	7-segment-display

Ambient conditions

– Protection class IP65 (INT-51: IP00)
– Temperature range
Operation –10°C to 55°C/14°F to 131°F (EN 1760-2)
(guaranteed) –20°C to 55°C/–4°F to 131°F
Storage –20°C to 80°C/–4°F to 176°F (EN 1760-2)
– Air humidity
according to EN1760-2 and IEC68-2-3
max. 93 % relative (no moisture condensation allowed)

Other data

– Response time	typ. 10 ms
– Length of safety edges	max. 30 m / 98.425' incl. conn. wire/channel
– Length of steel cable	max. 20 m / 65.62'
– Cable circuit resistance	max. 3 ohm (cable, contact points, gate)

Warranty and liability

1. The warranty and liability of Bircher Reglomat AG are based on the sales contract.
2. The warranty and liability shall expire prematurely, should the client or third parties not use and/or operate the product in compliance with existing operating instructions, should incorrect changes or repairs be made by the client or third parties, should the client or third parties, when a fault has occurred, not take suitable steps at once for a reduction of possible damage/losses and offer Bircher Reglomat AG a chance for remedying the said fault.
3. The warranty and liability shall exclude any damage for which there is no proof that it is due to poor materials, faulty construction, poor workmanship, and any damage caused by other reasons, for which Bircher Reglomat AG cannot be held liable.
4. No liability can be assumed for any consequential damage, provided this is not governed otherwise by applicable product liability laws and regulations.
5. Warranty claims made against the seller on the basis of the sales agreement are not affected by these regulations.
6. For the benefit of its customers Bircher Reglomat AG constantly develops its products further. Bircher Reglomat AG reserves the right to make changes to any of the products described in this document without prior notice.

MASKINKOD

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abas PROTECT
SÄKERHET SEDAN 1925

ELDOKUMENTATION

Projektnamn	ProSite
Projektnummer	8040 /33469-1
Objekt	Ambullerande Skjutgrind
Ritningsnummer	8040

BLADHÄNVISNING

Bladnummer	Funktion	Övrigt
1101	Komponentplacering	
1201	Huvudkrets	
1301	Styrsignaler Mo44	
2101	Klämlister	
2102	Styrsignaler	
5101	Omkoppling H/V	

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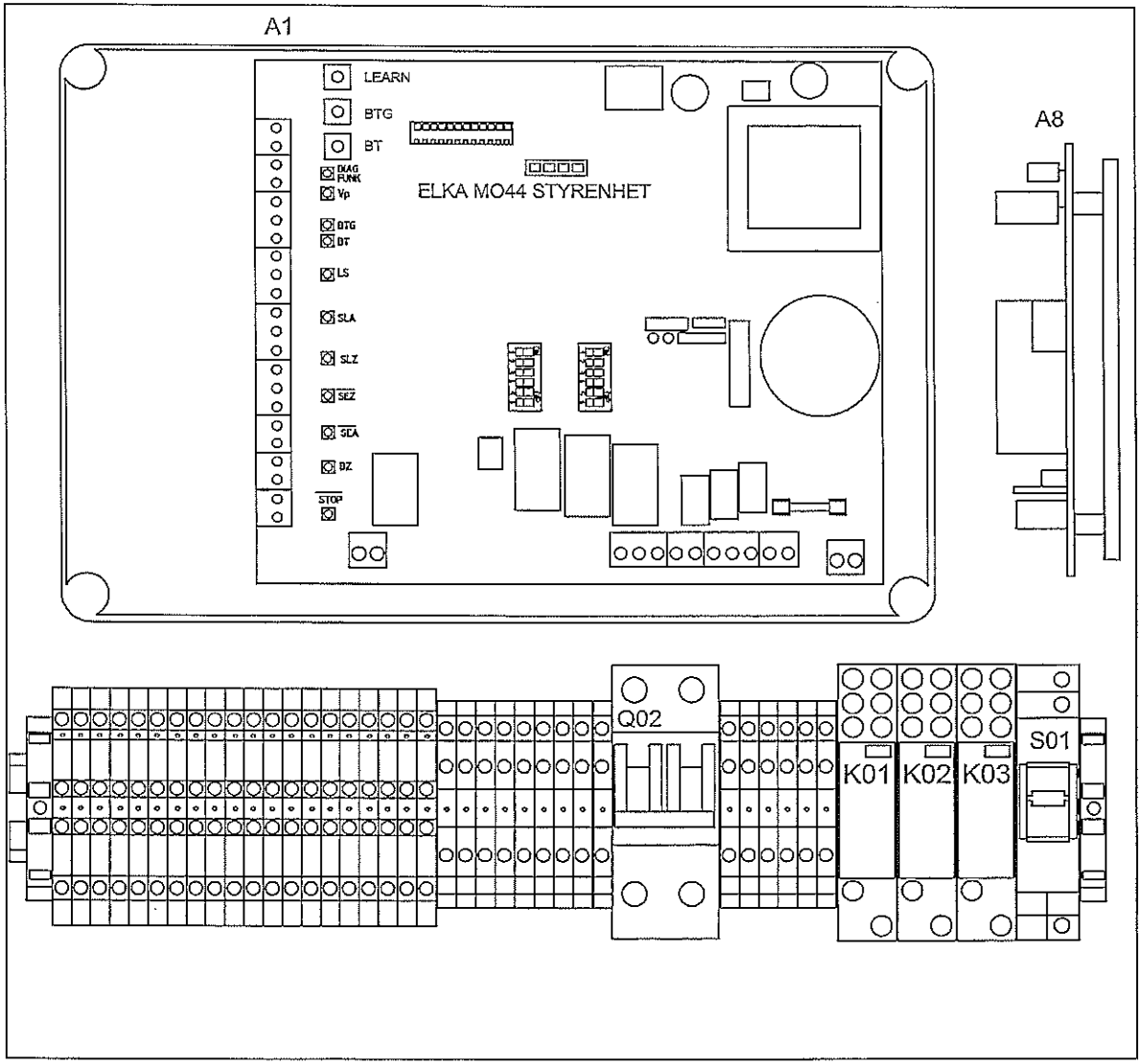
LYSDIODER KRETSKORT

VID AKTIV DIOD

Vp	☐	INGÅENDE STRÖM
BTG	☐	INGÅNG FÖR BEGRÄNSAD ÖPPNING AKTIVERAD
BT	☐	INGÅNG FÖR SELEKTIV Ö/S/S AKTIVERAD
LS	☐	FOTOCELL AKTIVERAD
SLA	☐	KLÄMLISTER I ÖPPNALÄGE AKTIVERADE
SLZ	☐	KLÄMLISTER I STÄNG LÄGE AKTIVERADE
SEZ	☐	GRÄNSLÄGE STÄNGD GRIND EJ AKTIVERAD
SEA	☐	GRÄNSLÄGE ÖPPEN GRIND EJ AKTIVERAD
STOP	☐	STOPPKRETS EJ PÅVERKAD



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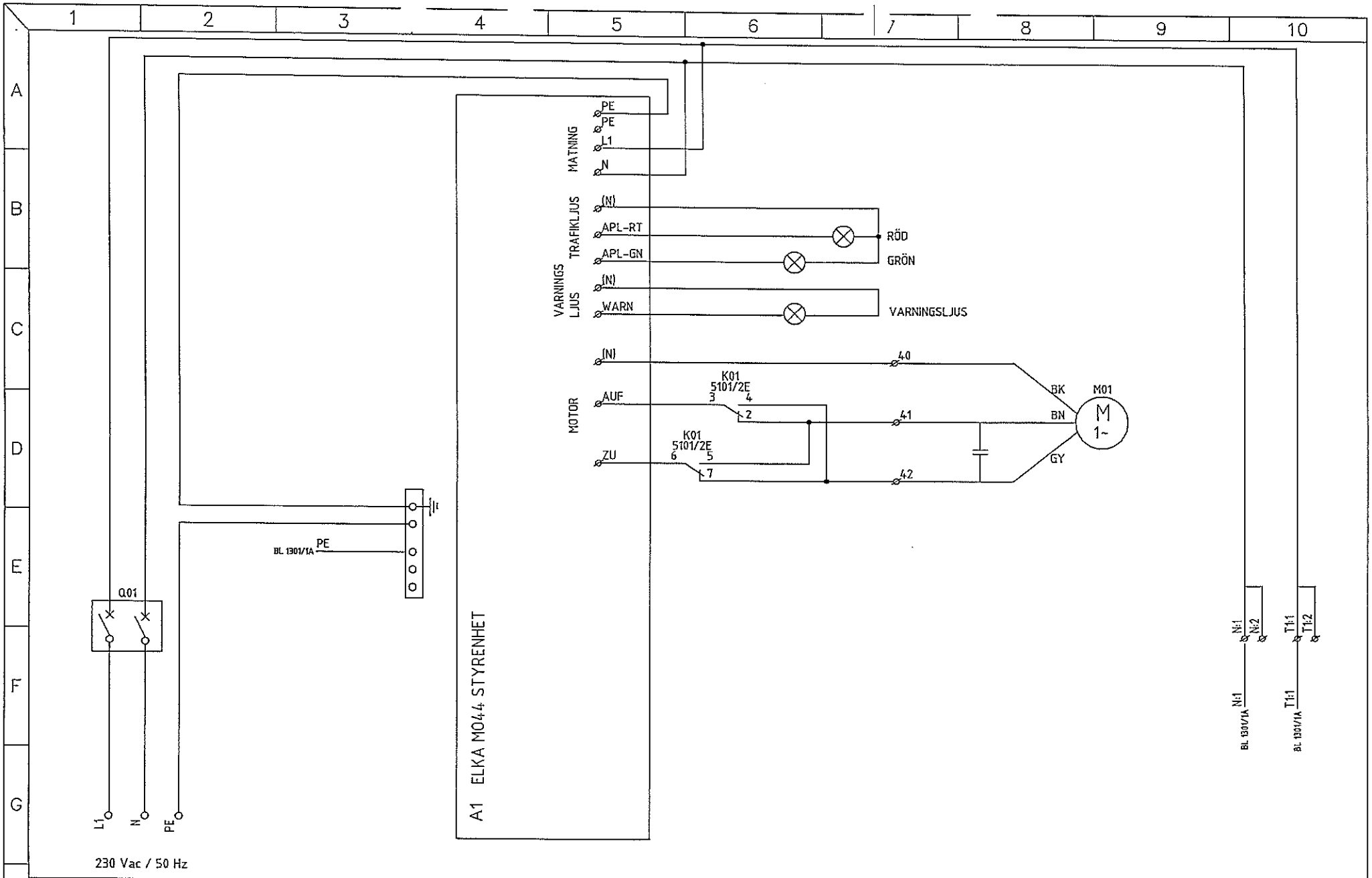
NR.	ÄNDRING	SIGN.	DATUM

ABAS Protect AB
ProSite
Ambullerande Skjutgrind
KOMPONENTPLACERING

ARBETSNUMMER	RITNINGSNUMMER	
P8040	E8040	
KONSTRUERAD AV	RITAD AV	BLAD
J.Lu	J.Lu	1101
DATUM	REV.	FORTS.
080514	X	1201



ABAS Protect AB

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Fax +46 (0)325 61 80 39
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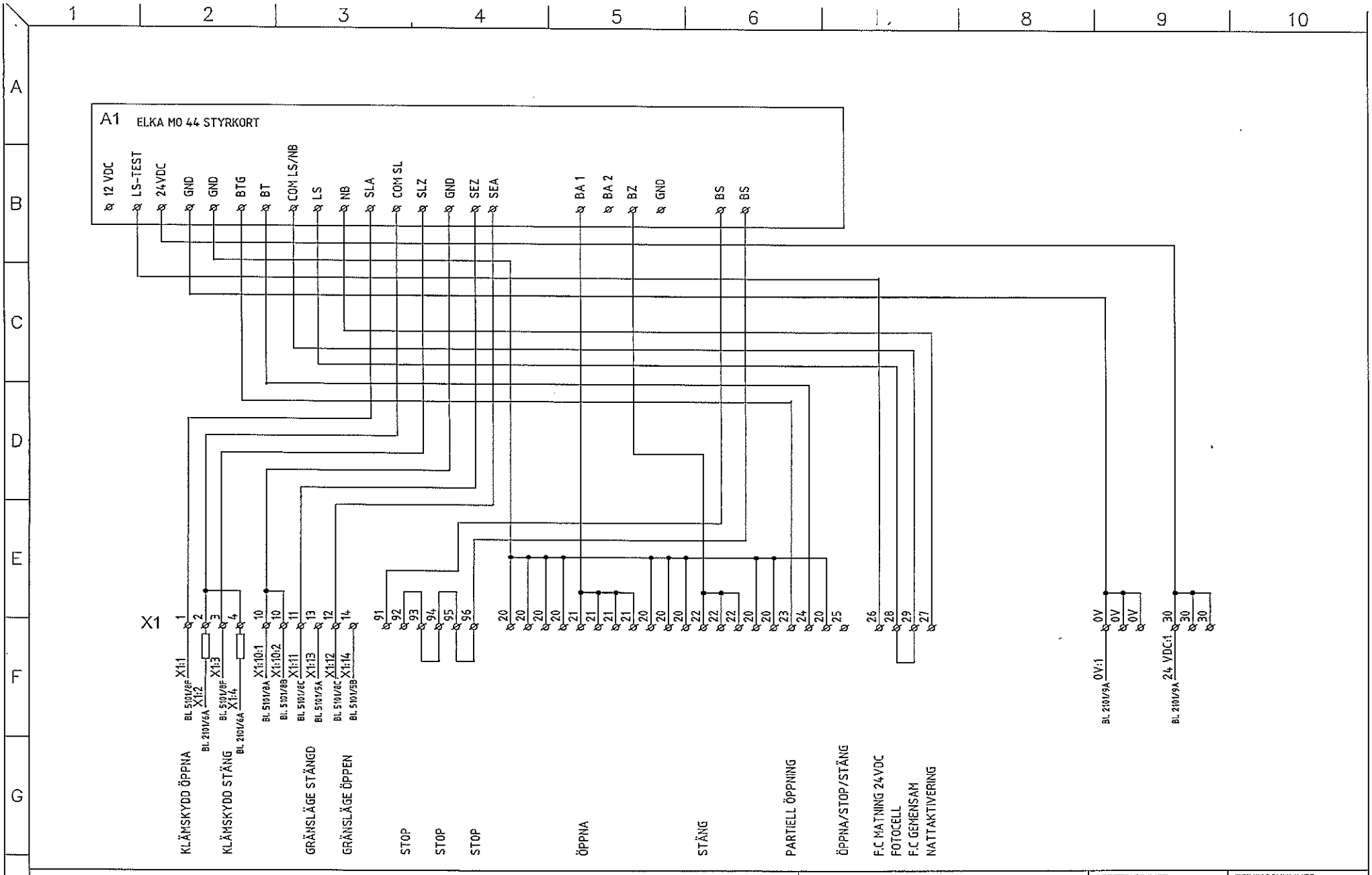
www.abasprotect.se

ABAS Protect AB
ProSite
Ambullerande skjutgrind
HUVUDKRETS

ARBETSNUMMER	RITNINGSNUMMER	
P8040	E8040	
KONSTRUERAD AV	RITAD AV	BLAD
J.Lu	J.Lu	1201
DATUM	REV.	FORTS.
080514	X	1301



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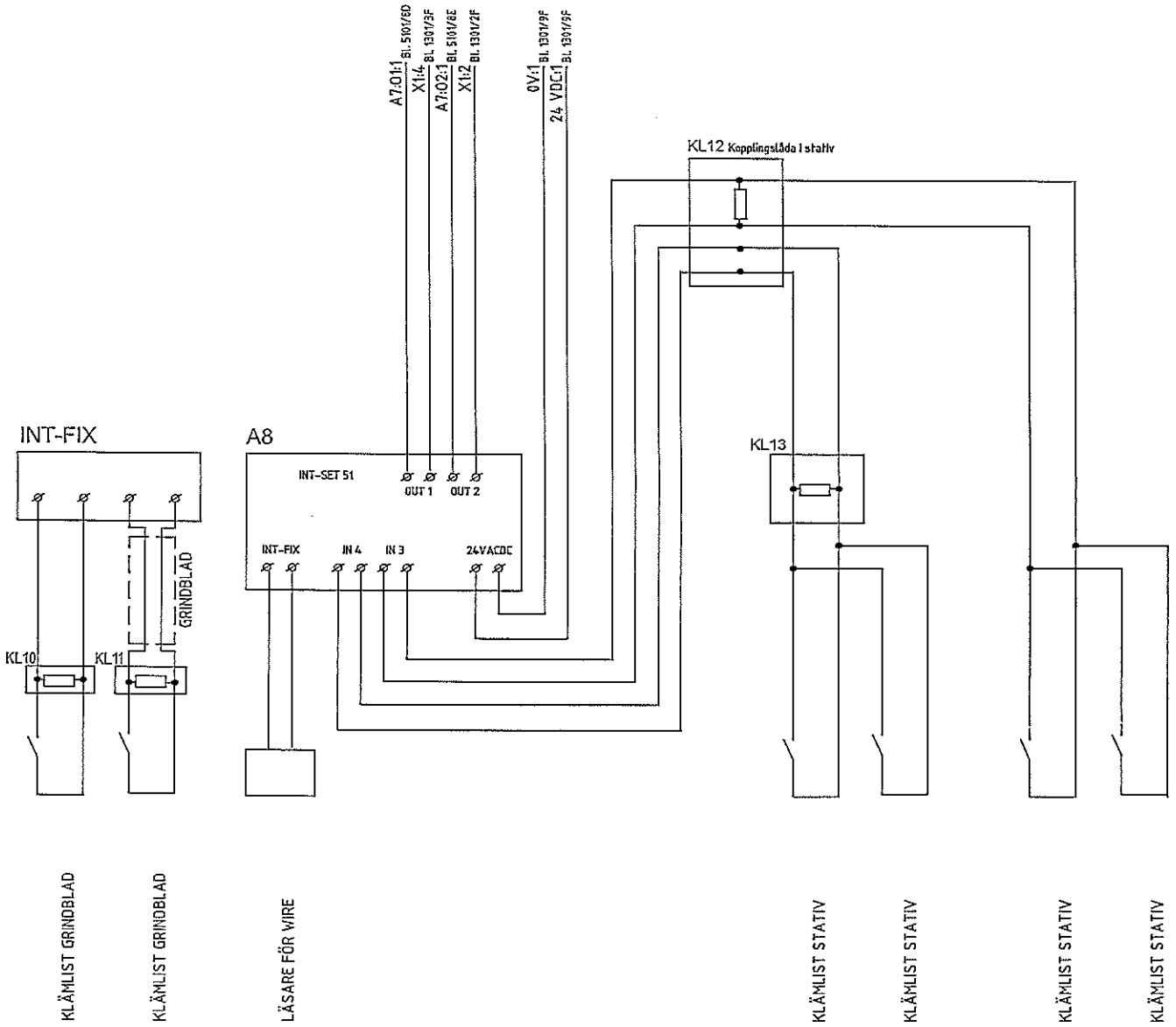
Ambullerande Skjutgrind
STYRSIGNALER MO44

ARBETSNUMMER	RITNINGSNUMMER	
P8040	E8040	
KONSTRUERAD AV	RITAD AV	BLAD
J.Lu	J.Lu	1301
DATUM	REV.	FORTS.
080522	X	2101



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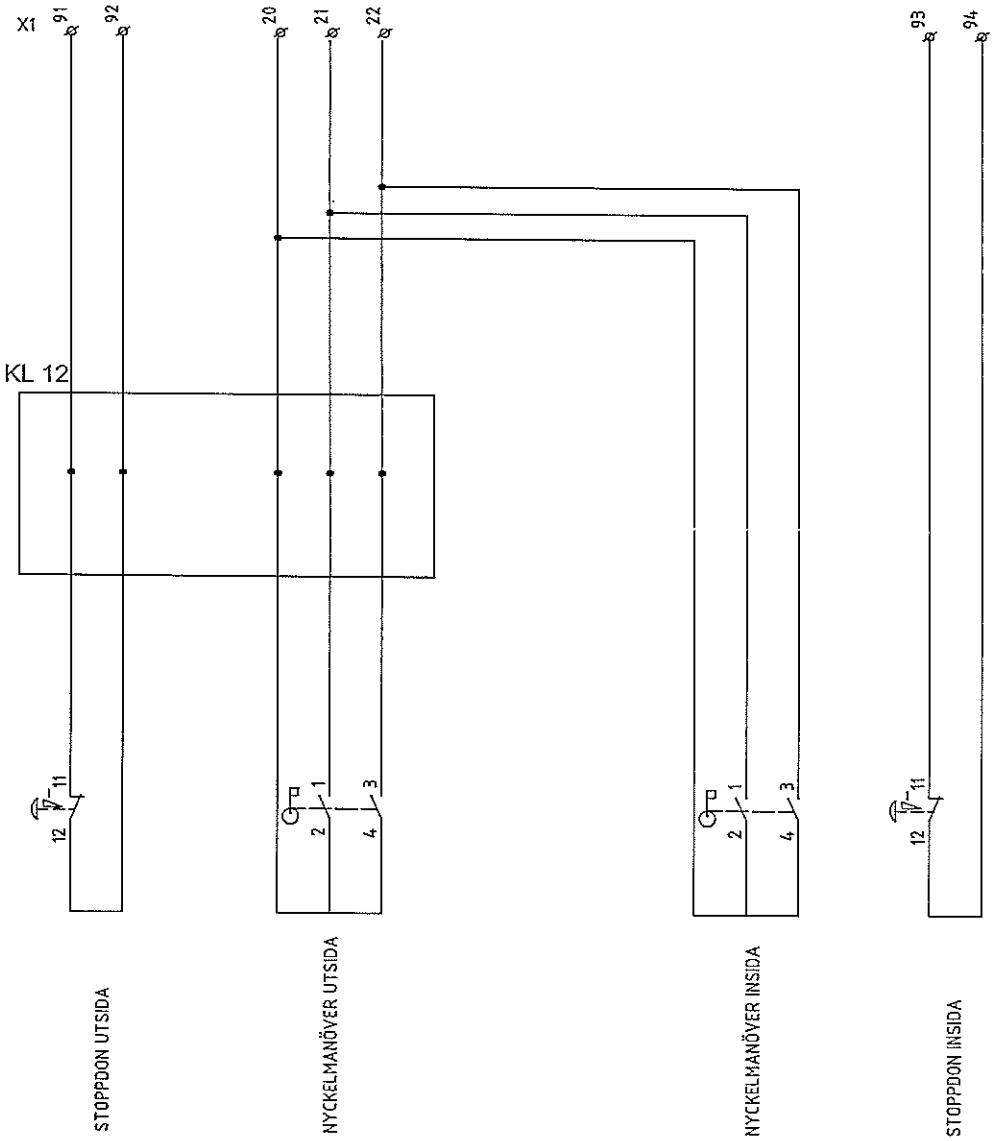
ProSite
Ambulerande Skjutgrind
KLÄMLISTER

ARBETSNUMMER	RITNINGSNUMMER	
P8040	E8040	
KONSTRUERAD AV	RITAD AV	BLAD
J.Lu	J.Lu	2101
DATUM	REV.	FORTS.
080522	X	2102



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NR.	ÄNDRING	SIGN.	DATUM

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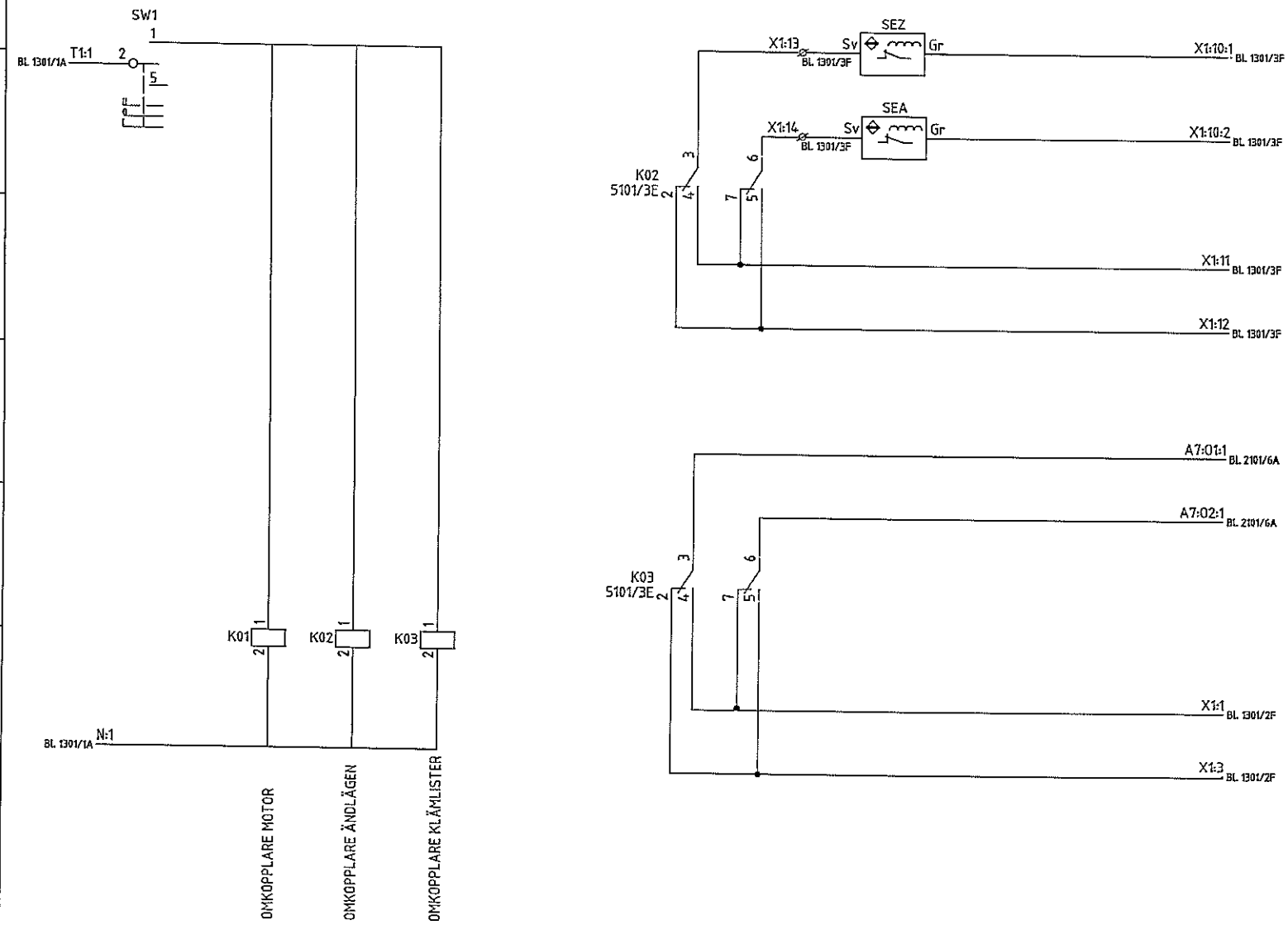
STYRSIGNALER

ARBETSNUMMER	RITNINGSNUMMER	
P8040	E8040	
KONSTRUERAD AV	RITAD AV	BLAD
J.Lu	J.Lu	2102
DATUM	REV.	FORTS.
080514	X	5101



NR.	ÄNDRING	SIGN.	DATUM

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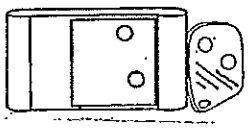
Ambullerande Skjutgrind
OMKOPPLING H/V

ARBETSNUMMER	RITNINGSNUMMER	
P8040	E8040	
KONSTRUERAD AV	RITAD AV	BLAD
J.Lu	J.Lu	5101
DATUM	REV.	FORTS.
080522	X	xx

Achtung: Bei Einstellarbeiten am Sender vorher Netzstecker des Antriebes/Empfängers ziehen.
Unfallgefahr

Codierung: Der Sender ist in der Lage zwei unabhängige Codierungen zu lernen.
1.) Zum Lernen die Sender nach Abb. auf nichtmetallischen Untergrund legen.
Beim zu lernenden Sender beide Tasten gleichzeitig mind. 3 sec gedrückt halten - loslassen
2.) Muttersender: Die Taste drücken, von der die Codierung übernommen werden soll und gedrückt halten.
3.) Dann beim SKJ die Taste drücken, auf die die Codierung übernommen werden soll (ca. 1 sek).
4.) Bei beiden Sendern die Tasten loslassen.
5.) Zum Lernen der zweiten Taste die Programmierung ab Punkt 1.) wiederholen.

Batteriewechsel: Sender öffnen (Schraube lösen)
2 neue Batterien vom Typ CR1616 einlegen (auf richtige Polung achten)
Sender schließen



Das Gerät entspricht den technischen Vorschriften der Europäischen Gemeinschaft, trägt das CE-Zeichen und kann in allen EU-Staaten und der Schweiz ohne Anmeldung verwendet werden.
Die Konformitätserklärung zu den Geräten finden Sie unter **www.tedsen.com.**